

Section 3-1: Equations and Formulas

By the end of this lesson, you should be able to answer:

- How do you determine if a number is a solution of an equation?
- How do you solve an equation or formula?

Where you might see this in the real world:

- Travel, safety, physics

Define the following terms:

1. Equation
2. True equation
3. False equation
4. Open sentence
5. Solution of the equation
6. Solve an equation
7. Formula

Example 1: Using only numbers from $\{-3, -2, -1, 0, 1, 2, 3\}$, determine the solution of each equation.

a. $14x + 3 = 12x + 7$

b. $x^2 = 9$ $x^2 = 4$

c. $3x + 8 = 5$

You should have noticed that there are two ways we could go about solving example 1.

First way:

Second way:

Example 2: Solve each equation.

a. $b - 3 = 14$

b. $45m = 9$

c. $4w + 7 = 23$

Example 3: State what the first step to solving each equation would be and how you know you should do that step. Then solve.

a. $4x + 5 = 3x + 6$

b. $18a - 7 = 101$

c. $6(x - 5) = 42$

d. $7g - 12 = -40$

***Remember that a formula is a rule that we can use to find values of similar situations. Anytime you have a formula, all you have to do is plug in the values you know, then solve the equation.

Example 4: The formula for converting from degrees Celsius to degrees Fahrenheit is $F = \frac{9}{5}C + 32$. Convert 43°C to $^{\circ}\text{F}$.

Homework:

"The greatest challenge to any thinker is stating the problem in a way that will allow a solution." - Bertrand Russell